

REVIEW ARTICLE

Streamlined Description of Pontics

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ABSTRACT

Advances in the field of restorative materials allow a lost tooth to be replaced by artificial tooth structure that is virtually indiscernible from the original. Pontics are the artificial teeth in a fixed partial prosthesis that replace the lost natural teeth, and restore function and appearance. A wide variety of names have been attributed to pontics by different authors. Classification systems were devised based on the nomenclature. Other than the definition there is no universality of the nomenclature, classification and indications. This greatly confuses the professionals in the decision making process of fixed prosthodontic treatment.

The aim of this review is to evaluate the descriptions given in the literature and comprehend them under a common heading.

Keywords: Pontics, Design, Fixed partial denture.

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INTRODUCTION

Pontics have been described under different headings by different authors and this is an attempt to comprehend the different views expressed. The word 'pontic' is derived from the Latin word *pons*, meaning bridge.¹ Glossary of prosthodontic terms defines pontic as an artificial tooth on a fixed partial denture that replaces missing natural tooth, restores its function and usually fills the space previously occupied by the clinical crown.² Keith E Thayer has qualified it as follows: 'They must restore function, be hygienically maintainable, be biologically and esthetically acceptable and be comfortable'.³ Johnston has further enumerated the functions of pontic as mastication, speech, maintenance of tooth relationships and esthetics.⁴ Bernard Smith has listed the functions as follows: to improve appearance, to stabilize the occlusion and to improve masticatory function.⁵

REQUIREMENTS

Rosenstiel has described the requirements of pontic under three headings viz biologic, esthetic and mechanical.⁶

1. *Biologic:* The pontic must be designed to facilitate cleansable tissue surface, access to abutment and exert no pressure on the ridge.
2. *Esthetic:* Pontic should be shaped to look like a tooth it replaces, appear to grow out of the edentulous ridge and should provide sufficient space for porcelain.
3. *Mechanical:* It should be rigid to resist deformation, with strong connectors.

Tylman⁷ has listed the requirements without any classification. The requirements are to restore function, to provide esthetics and comfort, be biologically acceptable, permit effective oral hygiene and preserve underlying residual mucosa.

Bernard Smith states that cleansability, appearance and strength are the ideal requirements of a pontic.⁵

DESIGN/CLASSIFICATION

There is much variation observed in designating the design of pontic and classifying them.

Rosenstiel classifies pontics into two general groups according to the mucosal relationships of the pontic.⁶

1. *Mucosal contact:* These include ridge lap, modified ridge lap, ovate and conical.
2. *Nonmucosal contact:* These include sanitary (hygienic) and modified sanitary pontics.

Tylman states that the designs of pontic can be visualized by analyzing each pontic surface individually on the mounted diagnostic casts.⁷ The surfaces are:• *Gingival Surface:* In the mandibular posterior region, spheroidal pontic is the design of choice because of its contour. In the maxilla, the modified ridge lap design satisfies both esthetics and hygiene. There should be at least 3 mm of space between pontic and tissue so that patient can maintain hygiene. Less than 2 mm space causes food entrapment.

- *Occlusal surface:* The reduction of the occlusal table of the pontic is suggested for reducing forces exerted on the abutment teeth.
- *Interproximal surface:* Vertical clearance must be sufficient to permit physiologic contour of the pontic and to allow space for the interproximal tissues.
- *Buccal and lingual surface:* The contours of buccal and lingual surfaces of the pontic are determined by esthetic, functional and hygienic requirements.

Keith Thayer lists the types of pontics as: Denture-base type, saddle, modified saddle, ridge saddle, ridge-lap, modified ridge-lap, lap facing, spheroidal, modified spheroidal, egg-shaped, bullet-shaped, heart-shaped, sanitary, modified sanitary, Bar-shaped.³

Bernard Smith classifies the pontics depending on five surfaces.⁵ They are, the occlusal, the proximal, the ridge the buccal and the lingual surface.

There are four basic designs for the ridge surface:

- *Wash-through:* Other terms used are hygienic and sanitary.

- *Dome-shaped*: This has also been described as torpedo-shaped or bullet-shaped.
- Ridge-lap and modified ridge-lap.
- Saddle.

Johnston states that there are two main types of pontics based on their form: The sanitary and the anatomic.⁴

MATERIALS USED

Rosenstiel lists the materials used for preparing pontics as metal, porcelain or acrylic resin.⁶ Mostly, a combination of metal and porcelain is used. Acrylic resin veneered pontics have had limited acceptance because of their reduced durability. Newer indirect composites based on high inorganic-filled resins and fiber-reinforced materials are also used. Shillingburg states that the pontic may be made entirely of cast metal or a combination of a metal backing and a porcelain or resin facing.¹ Keith Thayer states that dental materials currently in use for fabricating pontics are metal, porcelain and acrylic resin.³ Metal may be used alone or in combination with either porcelain or acrylic resin.

Ideal Ridge

Ideal pontics can be made only over an ideally shaped ridge. Keith Thayer describes the ideal ridge as the one in which gingiva is firmly attached to underlying alveolus and tissue surface is smooth, regular, well-keratinized and healthy.³ Moreover, there should be no subsurface bony irregularities and no frenum and muscle attached to the ridge. Ideally, a ridge should have a gentle concave contour mesiodistally at the crest as well as on the facial aspect of the edentulous areas and be gently convex faciolingually.

Pontic-Ridge Relationship

On the pontic ridge relation, Rosenstiel has indicated a pressure free contact between the pontic and the underlying tissue in order to prevent ulceration.⁶

Ridge Classification

Ridges are classified according to the deformities by Siebert.⁶

- Class I: Loss of faciolingual tissues with normal ridge height.
- Class II: Loss of ridge height with normal width.
- Class III: Loss of both ridge width and height.
- Class IV: Normal ridge.

Occlusal Forces

According to Rosenstiel reducing buccolingual width of the pontic by 30% will reduce occlusal forces and chewing efficiency is improved by 12%.⁶

CONCLUSION

1. Requirements of the pontic can be summarized as it should be rigid, cleansable, and should have an appearance of natural tooth.
2. A realistic classification would be:
 - i. Pontic that contacts the mucosa
 - a. Ridge lap (not used). This has to be deleted from the list
 - b. Modified ridge lap
 - c. Ovate
 - d. Conical
 - ii. Pontic not contacting the mucosa
 - a. Hygienic
 - b. Modified hygienic

All the other designs fall into the above.

3. Materials used are metal, metal and ceramic, metal and resin, reinforced resin.
4. Indications for a specific design of pontic are as follows:

Hygienic pontic is to be used in posterior mandible, conical in molars without esthetic requirement, modified ridge lap in anterior teeth, premolars and some molars, ovate pontic in maxillary incisors cuspids and premolars. Saddle ridge lap pontics are not recommended.

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